main categories of risks were identified which could affect on accessibility and quality named financial, supply, production, storage and logistic risks andin each category there were several uncertainties. Inflation rate, exchange rate, incorrect pricing, selection of suppliers, delay in shipment, policy issues, malfunction of machineries, untrained personnel and inappropriate condition of storage and distribution are some of risks in different categories. All of these risks had direct or indirect effect on quality or accessibility of medicines. **CONCLUSIONS:** Our study offers risk assessment methodology as a scientific way for identification of uncertainties which affect on quality and accessibility of medicines as two main objectives of national drug policy and also it demonstrated some proper strategies to mitigate them.

PHP42

### DO MACROECONOMIC CONDITIONS EXPLAIN DRUG PRICE VARIATIONS ACROSS COUNTRIES? A CROSS-SECTIONAL ANALYSIS

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**OBJECTIVES:** We examine how much of the cross-country drug price differences can be explained by macroeconomic conditions (real GDP per capita, openness, population, and corruption). **METHODS:** We use the Pricentric® dataset of drug prices and analyze prices of 13 drug packs across 32 countries at various pack levels in 2009. The sample is selected by requiring each pack having observations for more than 20 countries and each country having observations for more than 20 packs. We gather data on real GDP per capita, openness, and population from the Penn World Table, and the Corruption Perceptions Index by Transparency International. The analysis has two parts. First, for each drug pack, we regress the log prices (ex-factory, public, etc) on the four macroeconomic variables. Second, to achieve better identification, we pool together all data and regress log prices on the macroeconomic variables and drug fixed effects. **RESULTS:** For 6 of the 13 packs we find that the four macroeconomic variables can explain the cross-country price variations well (with R-squared over 8%). For the other 7 drugs the fit is worse, but the signs of the coefficients among the 13 packs are in general consistent. The pooled regression shows the same conclusion that the macroeconomic variables have strong explanatory power. For the whole sample, a 1% increase in real GDP per capita correlates with a 0.15% increase in drug price. Openness has little impact, while population has a small but significant positive association. A 1% increase in the corruption index correlates with a 0.3% increase for all prices. **CONCLUSIONS:** Controlling for drug fixed effects, macroeconomic variables show statistically significant and economically large effects on drug pack prices. In particular, real GDP per capita and corruption perceptions have large positive impacts suggesting drugs cost more in either more developed countries or in more corrupted countries.

PHP43

### THE HIGH COST OF TREATING CANCER: DO MANUFACTURER PRICING POLICIES TAKE AFFORDABILITY INTO ACCOUNT?

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**OBJECTIVES:** In 2008, GLOBOCAN estimated ~2.8 million new cases of cancer in China, making up ~22% of all global cases. Although the Chinese government has initiated a number of reforms to improve patient care, oncology drug access remains a significant issue with medicines not being on national lists of essential or reimbursed drugs. In China, manufacturers often set the price of oncology drugs free of government mandates as these are not reimbursed. In contrast, in markets where governments fund cancer treatment (South Korea, Japan, Taiwan), all medicines are assessed and undergo price setting/negotiation. Given these dynamics and discussion by pharma companies to price medicines more in line with affordability, this research explores the price differences for oncology agents across different types of markets taking into account the purchasing power parity and level of patient access. **METHODS:** Review current prices of selected oncology agents and the level of patient access across the Asian markets. Compare uptake of drugs and identify drivers for access and uptake. Analyze prices relative to purchasing power parity and compare to US & EU. **RESULTS:** The price differential across Asian markets is correlated with lack of reimbursement, i.e., higher prices in countries where there is no likelihood of reimbursement. In contrast, in countries where these drugs are reimbursed, prices are tightly controlled and subject to regular price cuts. Affordability remains the major challenge for access to cancer drugs. **CONCLUSIONS:** Currently, innovative cancer drugs are outside the reach of most Chinese as drug prices are some of the highest in the world. As the government aims to reimburse more oncology therapies, it will need to agree with manufacturers on price levels. Asian markets with ability to secure patient access to medicines at regulated prices can be useful models for China as the government looks to improve the system.

## HEALTH CARE USE & POLICY STUDIES - Formulary Development

PHP44

### IMPLEMENTATION & EVALUATION OF ESSENTIAL MEDICINES LIST 2011 IN A RURAL RESOURCE LIMITED DISTRICT HOSPITAL IN INDIA

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**OBJECTIVES:** Our major objective of the study was to assess the budgetary outcome of implementing the first Hospital Essential Medicines List (HEML) 2011 with a revised purchase policy in a rural resource limited, district charity hospital in India. HEML was also compared with national and World Health Organization (WHO) EMLs. **METHODS:** Expenditure on medicines purchase for the year of 2010 was compared for the year 2011 (after the first HEML and revised purchase policy). Evaluations were done to compare the number of medicines, dosage forms and fixed drug combinations of tablets and injections. Microsoft Excel 2007 was used to process the results. **RESULTS:** There was approximately 40 % reduction in the money spent on medicines in 2011 when compared to 2010, which was approximately nine crores of Indian Rupees (approximately 1.7 Million US Dollars). The number of medicines in 2010 was 1627, which was reduced to 424 in HEML 2011. WHOEML 2011 has 350 and National Essential Drugs List (NEDL) 2011 of India has 348 medicines. While preparing the HEML, 31 tablets and 14 injections of two-drug fixed combinations were removed. The great reductions were; 51 ointments to 9, 69 drops to 5, 11 paste to 0, 21 solutions to 3 and 14 creams to 1. The dosage forms removed include elixir, insulin pen, gums, paste, paint, gargle, mouthwash. **CONCLUSIONS:** New purchasing policy and implementation of HEML were the crucial factors in the cost minimization, in our charitable hospital. The WHOEML 2011, NEML 2011 and the HEML 2011 were comparable with few exceptions. Health care policy makers should note that, use of WHOEML and NEML with local experience makes implementation of HEML more practical in the countries with limited professional resources.

## HEALTH CARE USE & POLICY STUDIES - Health Care Costs & Management

PHP45

### RELAPSE PREVENTION AFTER SWITCHING TO RISPERIDONE LONG-ACTING INGECTION: 6 MONTHS MIRROR IMAGE STUDY IN JAPAN

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Compliance is an important factor for successful clinical management of schizophrenia. Risperidone long-acting injection (RLAI) can improve compliance compared to oral atypical anti-psychotics and several studies found the use of RLAI was associated with reduced hospitalization. RLAI was introduced to Japanese practice from June 2009 and is currently only available atypical anti-psychotic depot medication. **OBJECTIVES:** To assess the impact of RLAI use on hospitalization as a proxy of relapse in daily practice among Japanese patients with schizophrenia. **METHODS:** Mirror image comparison of psychiatric related hospitalization was made for 6 months before (pre-RLAI) and 6 months after (post-RLAI) the initiation of RLAI. The data source was commercially available health insurance claims database (Japan Medical Data Center, Tokyo; January, 2009 to June, 2011). The inclusion criteria were patients (20-59 years of age) who were diagnosed with schizophrenia (ICD F20 to F29) and who had continuous enrollment of the Group health insurance for 6 months before and 6 months after the initiation of RLAI. Patients with long-term hospitalization (>6 months) were excluded. Additionally, study patients were restricted to have at least 3 month continuous treatment with RLAI. In the analysis the initiation of RLAI during hospitalization contributed to pre-RLAI hospitalization because previous treatment was considered as failure. **RESULTS:** A total of 25 patients from 58 patients who were initiated on RLAI met the inclusion criteria. Twenty patients started at outpatient visits and 21 patients continued the RLAI treatment after 6 months. Mean dose was 33.5mg. The proportion of patients requiring psychiatric hospitalization was changed from 28% to 8% between pre- and post-initiating RLAI ($P<001$). The total number of psychiatric hospitalization was reduced by 82% (11 vs. 2, $P=0.02$). **CONCLUSIONS:** Switching from oral antipsychotics to RLAI may impact on the reduction in hospitalization among Japanese schizophrenic patients. Further investigation is necessary.

PHP46

### BURDEN OF HERPES ZOSTER IN POPULATION WITH COMPROMISED IMMUNE SYSTEM IN SOUTH KOREA

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**OBJECTIVES:** To estimate the annual prevalence, the related medical costs, and health care resource utilization of patients diagnosed as herpes zoster (HZ) and post-herpetic neuralgia (PHN), respectively, with different immune status in South Korea. **METHODS:** This study is a retrospective analysis using the Korean National Patients Sample 2009 database of the Health Insurance Review and Assessment Service (HIRA K-NPS). Results of the sample database were extrapolated to the total Korean population aged ≥ 40 years. HZ and PHN patients were identified from diagnostic codes, and categorized into three subgroups based on the severity of immune status; non-compromised, mild to moderate and severe status. Medical costs included all HZ- or PHN-related costs incurred at medical facilities and medication costs. **RESULTS:** The prevalence of HZ (or PHN) was 15.53 (or 2.13) per 1000 persons among those aged ≥ 40 years in South Korea. The annual medical costs per patient for HZ (or PHN) management were US$191 (or $177). The average number of outpatient visits, emergency department visits and hospital admissions of HZ (or PHN) patients were 3.75, 0.01, and 0.05 (4.44, 0.01, and 0.03) per annum, respectively. With regard to the severity of immunodeficiency, patients with severe conditions were related to higher prevalence rate, medical costs and health care utilization. **CONCLUSIONS:** HZ and PHN cause considerable disease burden in South Korea, especially among immunocompromised population. Considering rapidly aging population and increasing prevalence of immunosuppressive conditions, the disease burden is likely to increase. The findings of the present study can serve as important baseline data for policy decision making to reduce the burden, such as the development of a HZ vaccination recommendation.

PHP47

### IMPACT OF ECONOMIC AND POLICY FACTORS ON CHINA'S HEALTH CARE EXPENDITURE

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